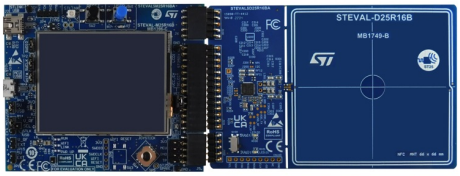


STEVAL-ST25R3916B High Performance NFC Universal Device and Emvco Reader Owner's Manual

ST25R3916B High Performance NFC Universal Device and Emvco Reader Owner's Manual

Contents

Introduction

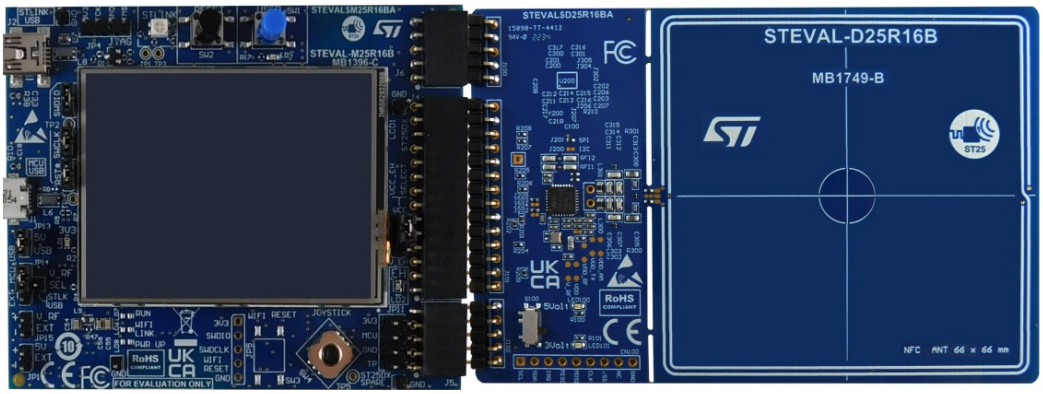
The STEVAL25R3916B is a ready-to-use kit based on the ST25R3916B high-performance NFC universal device for contactless applications. The kit allows evaluating this device features and functionality in the reader/writer, peer to peer, and card emulation modes. The kit consists of:

- a microprocessor main board (STEVAL-M25R16B), which includes hardware and software tools that enable using the entire STM32 ecosystem. This board is powered through USB connectors

- a reader expansion board (STEVAL-D25R16B), which embeds the **ST25R3916B** device and an antenna etched on the PCB with its tuning circuit

The communication link between the two boards is the SPI bus. The processor card provides the power. Specific data lines complete the pin connector assignment shared between the cards.
Thanks to several demonstrations that can be performed, this kit helps the users develop and test their applications. The kit is FCC certified, with FCC ID: YCPR3916BD1. It is also IC certified, with IC: 8976A-R3916BD1; PMN: STEVAL-25R3916B; HVIN: STEVAL-25R3916B.

Figure 1. STEVAL-25R3916B kit (top view)



Features

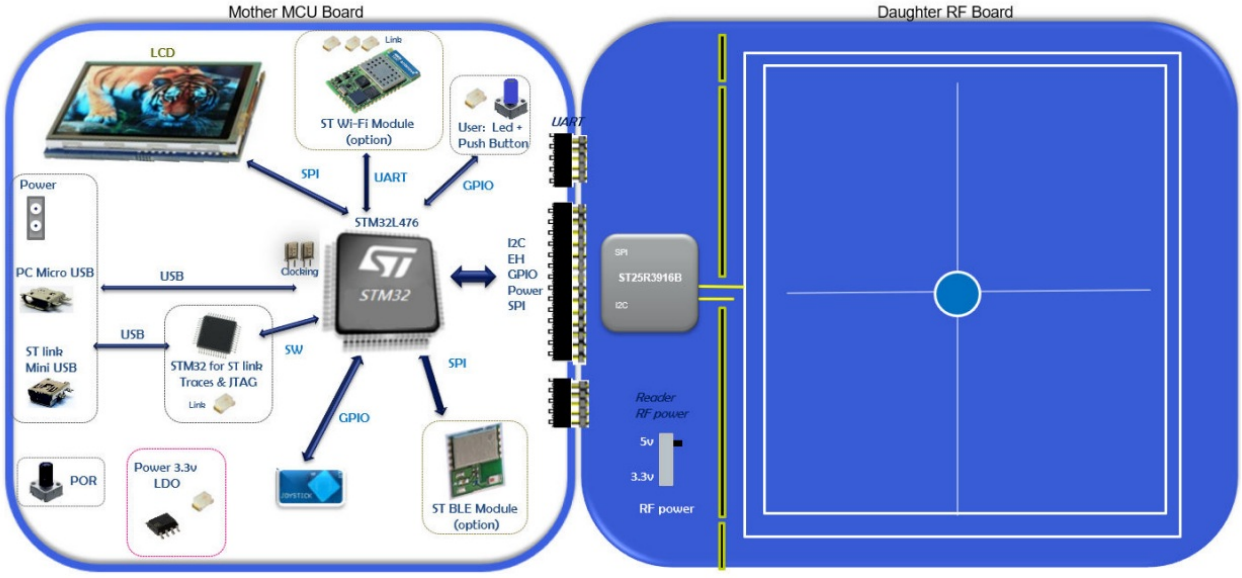
- NFC card reader IC: **ST25R3916B**
- 13.56 MHz inductive antenna etched on PCB and associated tuning circuit
- ISO18092 (NFCIP-1) active and passive initiator and target modes
- NFC Forum NFC-A, NFC-B, NFC-F, and NFC-V reader
- ISO14443A, ISO 14443B, and ISO15693 reader
- FeliCa™ reader
- Support for all five NFC Forum Tag types in reader mode
- Power output 42 dBµA/m @10 m (maximum power according to ETSI EN 300 V2.1.1)
- NFC Forum Type 3 tag (NFC-F) host card emulation
- NFC Forum Type 4A tag (NFC-A) host card emulation
- Transparent and stream modes to implement MIFARE™ classic compliant or other custom protocols
- Integrated inductive sensing system for low-power detection of a tag presence using phase or amplitude measurement
- High output power
- User selectable and automatic gain control
- Serial peripheral interface (SPI) up to 10 Mb/s
- I²C with up to 400 Kbit/s in fast mode, 1 Mb/s in fast mode plus
- Automatic antenna tuning (AAT) via a variable capacitor

Hardware overview

The main board PCB is usually connected to the PC via USB.
The STM32 MCU firmware controls the **ST25R3916B** via the extension connectors.
The 5 V supply of the USB bus powers both boards. An LDO converts this voltage down to 3.3 V to supply the microcontroller and the **ST25R3916B**.
For the reader expansion board, you can select a 3.3 or 5 V RF powering. A green LED close to the motherboard

micro-USB plug indicates when the board is powered.

Figure 2. Hardware connection



2.1 Main board hardware

The **STEVAL-25R3916B** main board embeds a 32-bit microcontroller of the STM32L476 series, which is based on the Arm Cortex-M4 high-performance CPU with FPU. This board is powered through the USB bus. It includes:

- an **ST-LINK** in-circuit debugger and programmer for STM32 microcontrollers
- push buttons (reset and user)
- a mini-USB debug connector
- a user-dedicated micro-USB connector
- support for ST NFC tag

Table 1. Powering options

Reference	Connector	Position	Description
1	JP13	Closed 1-2	Card powered by USB
2	JP14	Closed 2-3	Card powered by micro-USB
3	JP15	Open	**STEVAL-25R3916B** board powering (specific feature)
4	JP16	Open	Card powered by an external source

Figure 3. STEVAL-25R3916B main board layout (top view)

1. Software bus (ST-LINK)
2. ST-LINK activity LED
3. Reset button
4. User button
5. User LED
6. Extension connectors
7. On-going tag detection indicator
8. Extension connector – GPIO setting

9. Joystick
10. Wi-Fi reset button
11. Wi-Fi software update
12. Power 3.3 V LED
13. Wi-Fi status LED
14. Powering options
15. User USB
16. ST-LINK USB

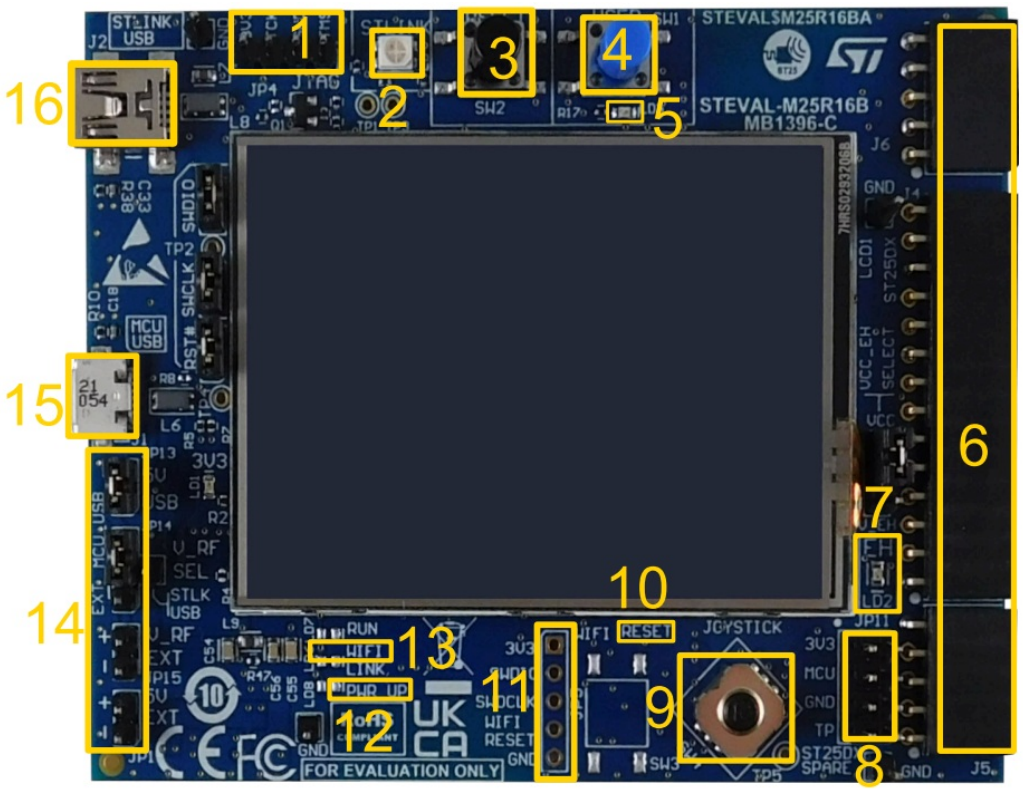
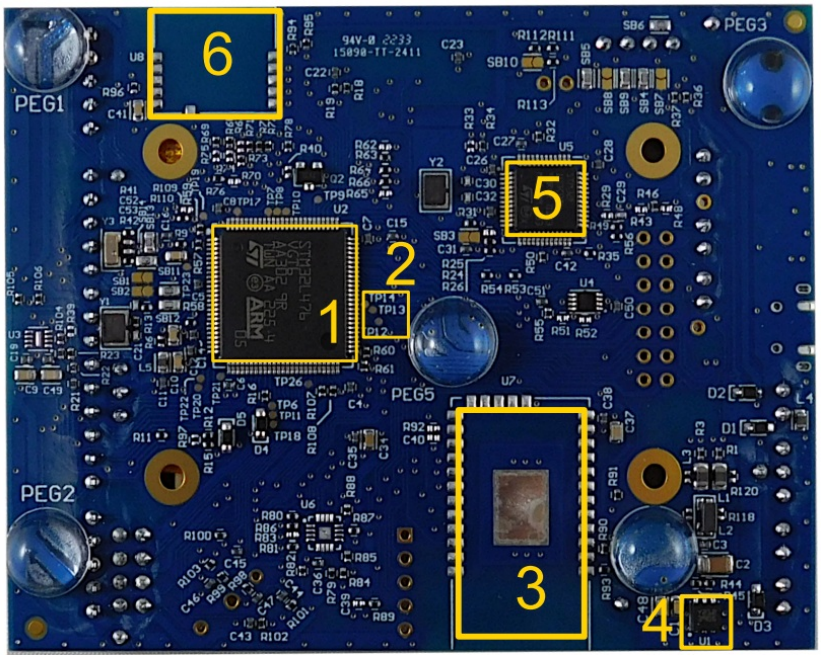


Figure 4. STEVAL-25R3916B main board layout (bottom view)

1. STM32L476 MCU
2. Test points for external connections
3. Room for Wi-Fi module
4. Regulator
5. STM32 ST-LINK
6. Room for Bluetooth® Low Energy module



2.1.1 Jumper default configuration

The [STEVAL-25R3916B] jumpers are configured by default to power the kit through the micro-USB connector.

Figure 5. Jumper default configuration

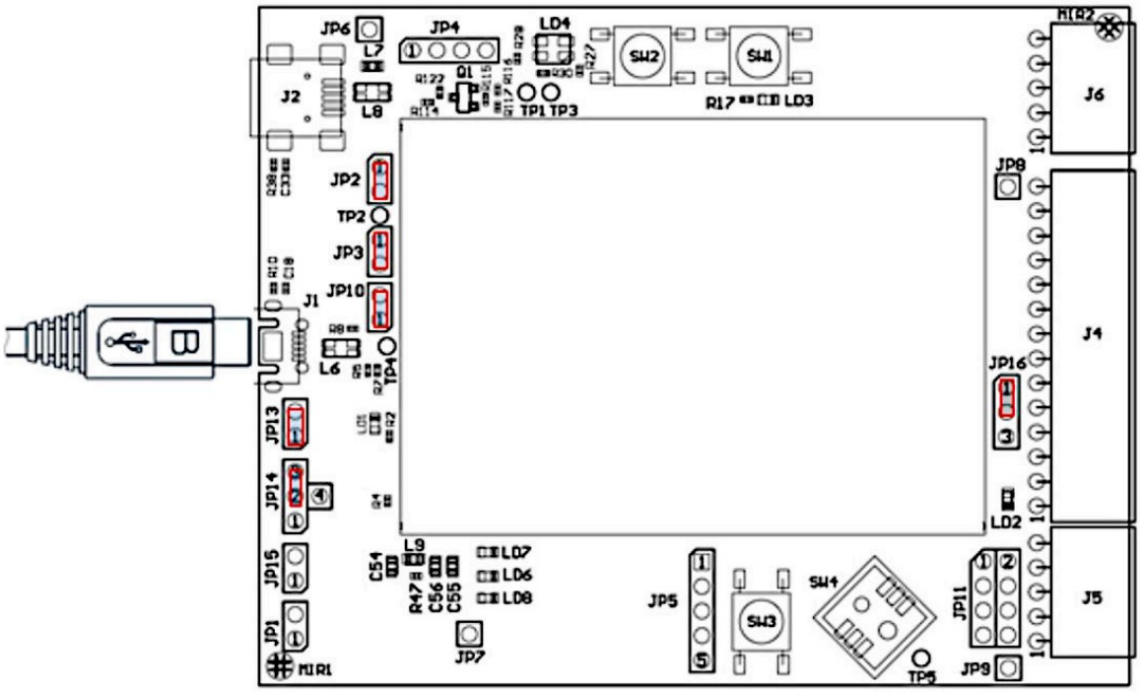


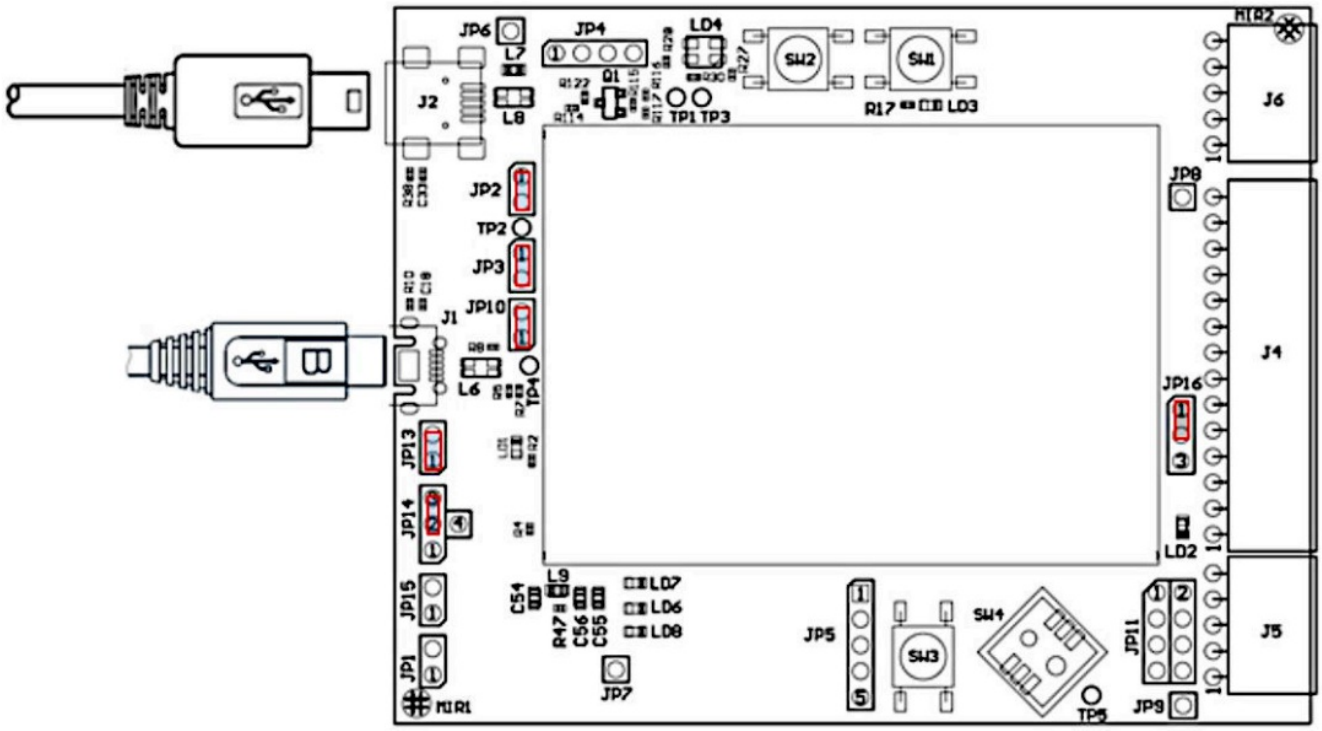
Table 2. Jumper default configuration

Connector	Position	Description
JP2	Closed 1-2	[ST-LINK] UART debug features
JP3		
JP10		
JP13		Card powered by USB
JP14	Closed 2-3	Card powered by micro-USB
JP16	Closed 1-2	Board powering specific feature

2.1.2 Software development configuration

This section describes the software development configuration for the main board. It also describes the USB connection when using the embedded ST-LINK.
The J1 micro-USB connector powers the STEVAL-25R3916B.
The J2 mini-USB allows exchanging data between the board and the computer.

Figure 6. Software development configuration



2.2 Expansion board hardware

The **STEVAL-25R3916B** reader expansion board embeds:

- **ST25R3916B**
- an antenna, with its own tuning circuit, etched on the PCB
- a switch to select 3.3 V or 5 V RF powering

The **ST25R3916B** is directly connected to the filtered 5 V USB supply.
There are additional supply filtering components close to the NFC/HF reader IC. All the decoupling capacitors have been placed as close as possible to the **ST25R3916B**.
To connect another reader PCB via SPI, remove the serial resistors and use CN100. By default, the SPI is the firmware and hardware access bus.
Use the I²C bus, instead, by changing J200, J201, J202, J203, J204, and J205.
J206 allows bypassing the internal VDD_RF/VDD_AM regulators to supply an output current higher than 350 mA.

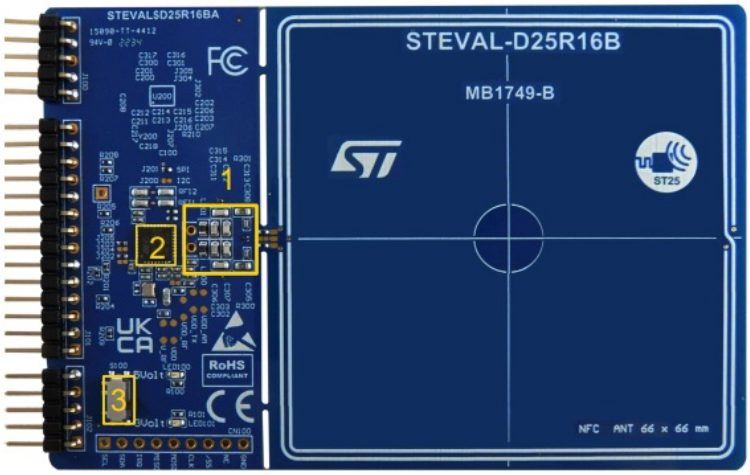


Figure 8. **STEVAL-25R3916B expansion board layout (bottom view)**

Figure 7. STEVAL-25R3916B expansion board layout (top view)

1. RF front-end area
2. ST25R3916B
3. RF powering selection switch (3.3 or 5 V)

2.2.1 Antenna and matching network components

This board contains the matching network and the automatic antenna tuning capacitors based on varicap.

Getting started

3.1 System requirements

- A micro-USB cable
- A USB port capable of delivering at least 400 mA at 5 V (2 W)
- A safety extra-low voltage (SELV) limited power source to supply the unit through the USB port
- A mini-USB cable to use the embedded ST-LINK and the STM32 ecosystem development

3.2 How to use the kit in standalone mode

Step 1. Connect the STEVAL-25R3916B main board to the reader expansion board.
Important: It must be used on a clean and non-flammable surface.
Step 2. The kit is delivered with the default jumper configuration. Power it through the micro-USB via a cable

connected to the power source.
Step 3. Supply the unit through a safety extra-low voltage (SELV) limited power source via the USB port.
The source must not exceed 60 VDC/8 A/100 V.
When powered up, the microcontroller starts the firmware, which is already downloaded in the flash memory. This allows demonstrating the ST25R3916B features:
– reader and writer
– card emulation
– peer to peer
– automatic antenna tuning
– USB mode (refer to the next section for further details)

3.3 How to use the kit in USB mode

Step 1. Connect the STEVAL-25R3916B kit to a PC via a micro-USB cable.
Important: It must be used on a clean and non-flammable surface.
The PC USB port must be capable of delivering at least 250 mA at 5 V.
Step 2. To control the board, download the STSW-ST25R010 software and install it.

Schematic diagrams

Figure 9. STEVAL-ST25R3916B main board circuit schematic (1 of 10)

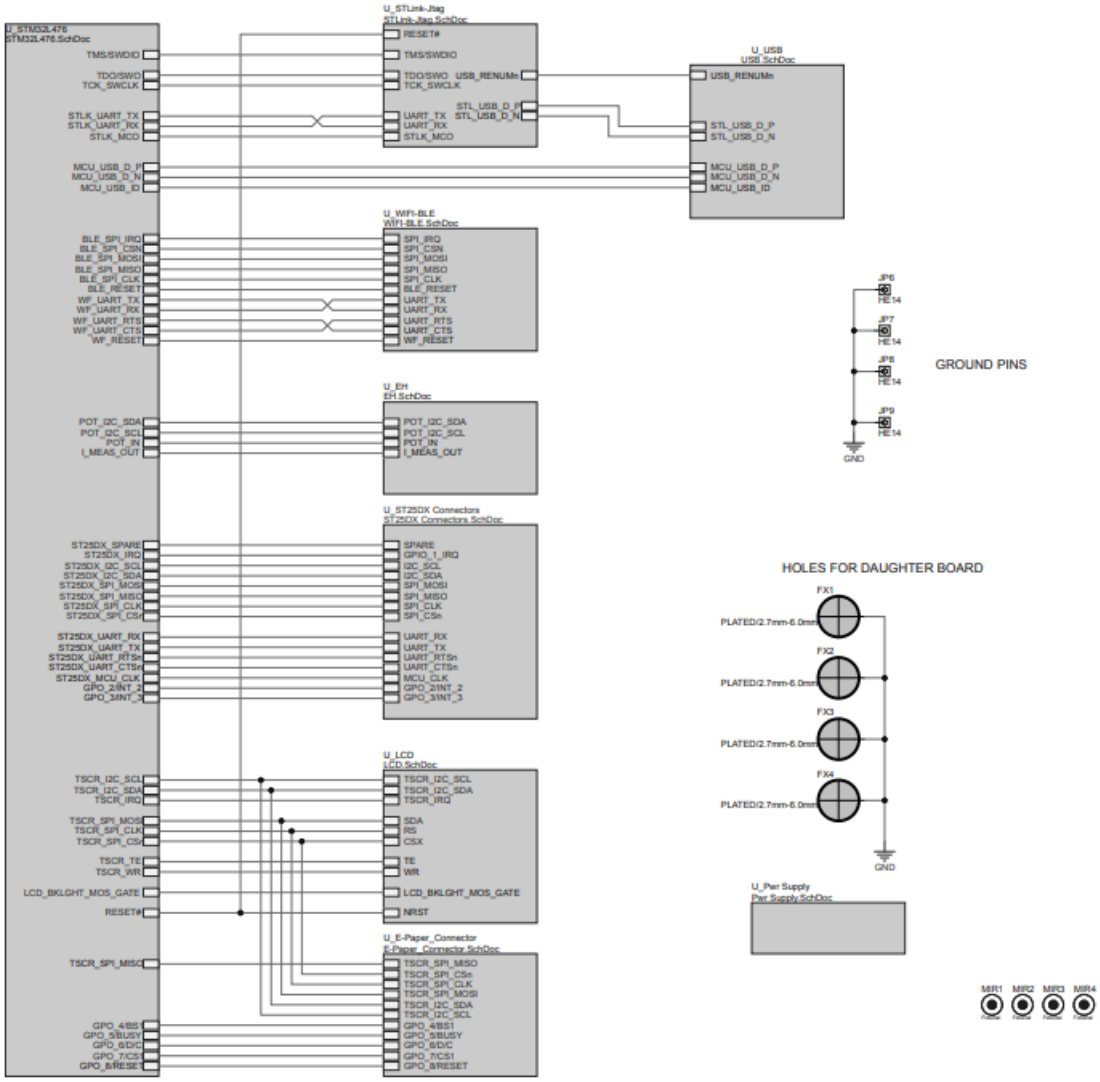


Figure 10. STEVAL-ST25R3916B main board circuit schematic (2 of 10)

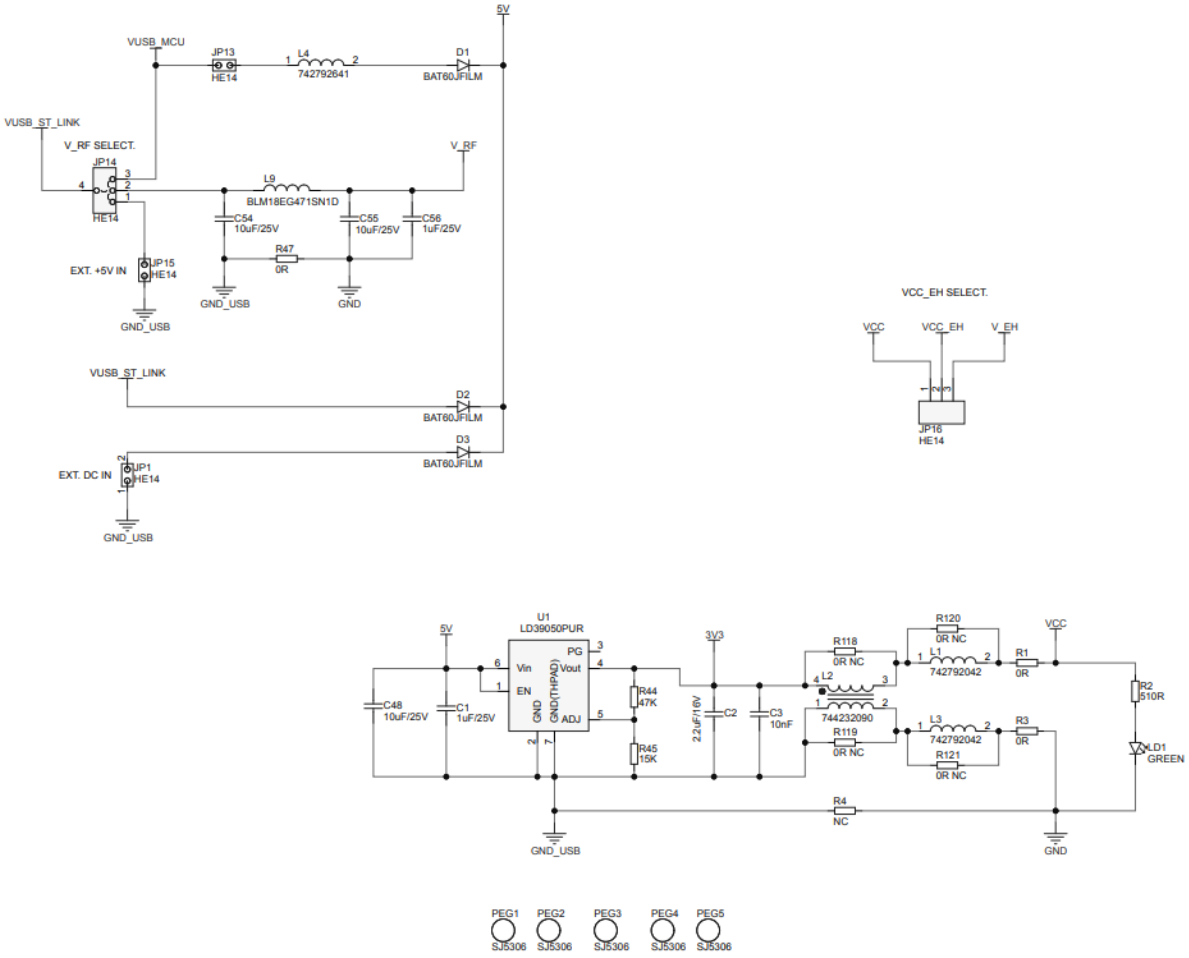


Figure 11. STEVAL-ST25R3916B main board circuit schematic (2 of 10)

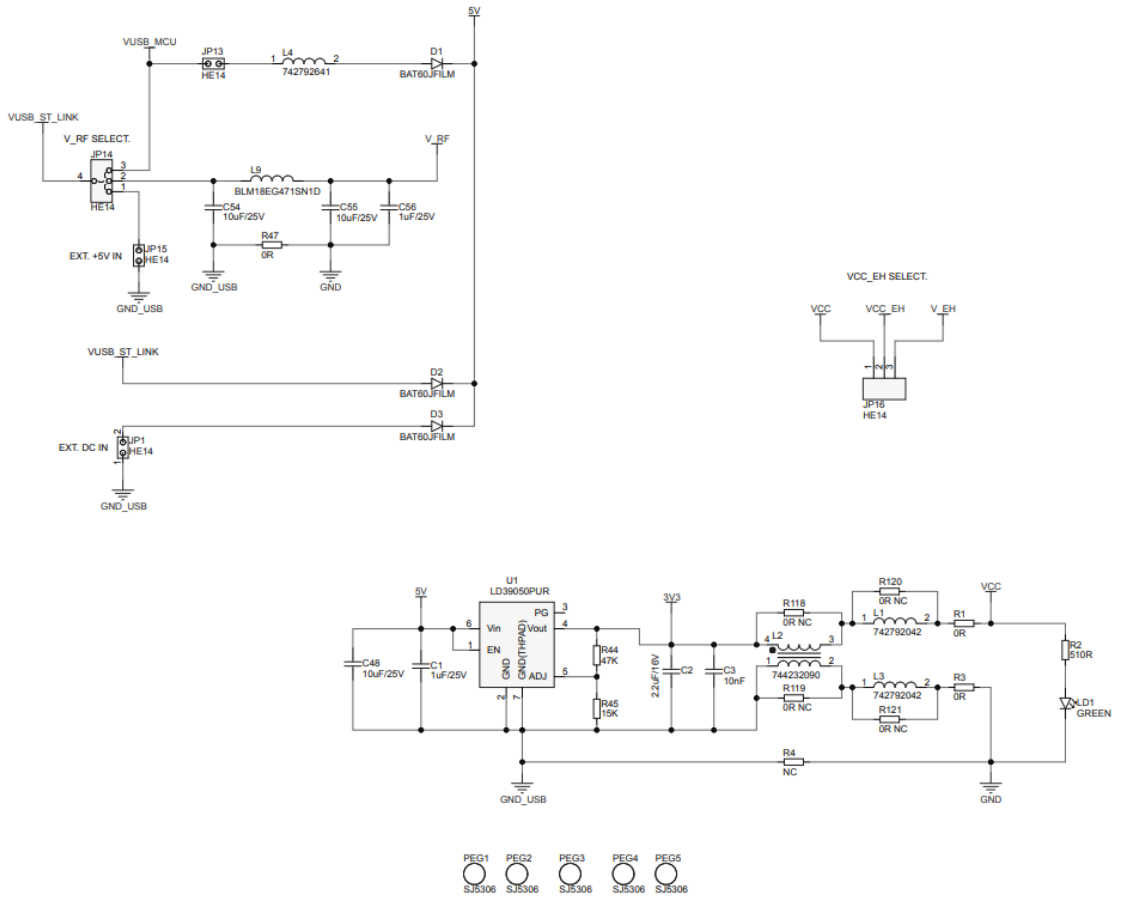


Figure 12. **STEVAL-ST25R3916B main board circuit schematic (3 of 10)**

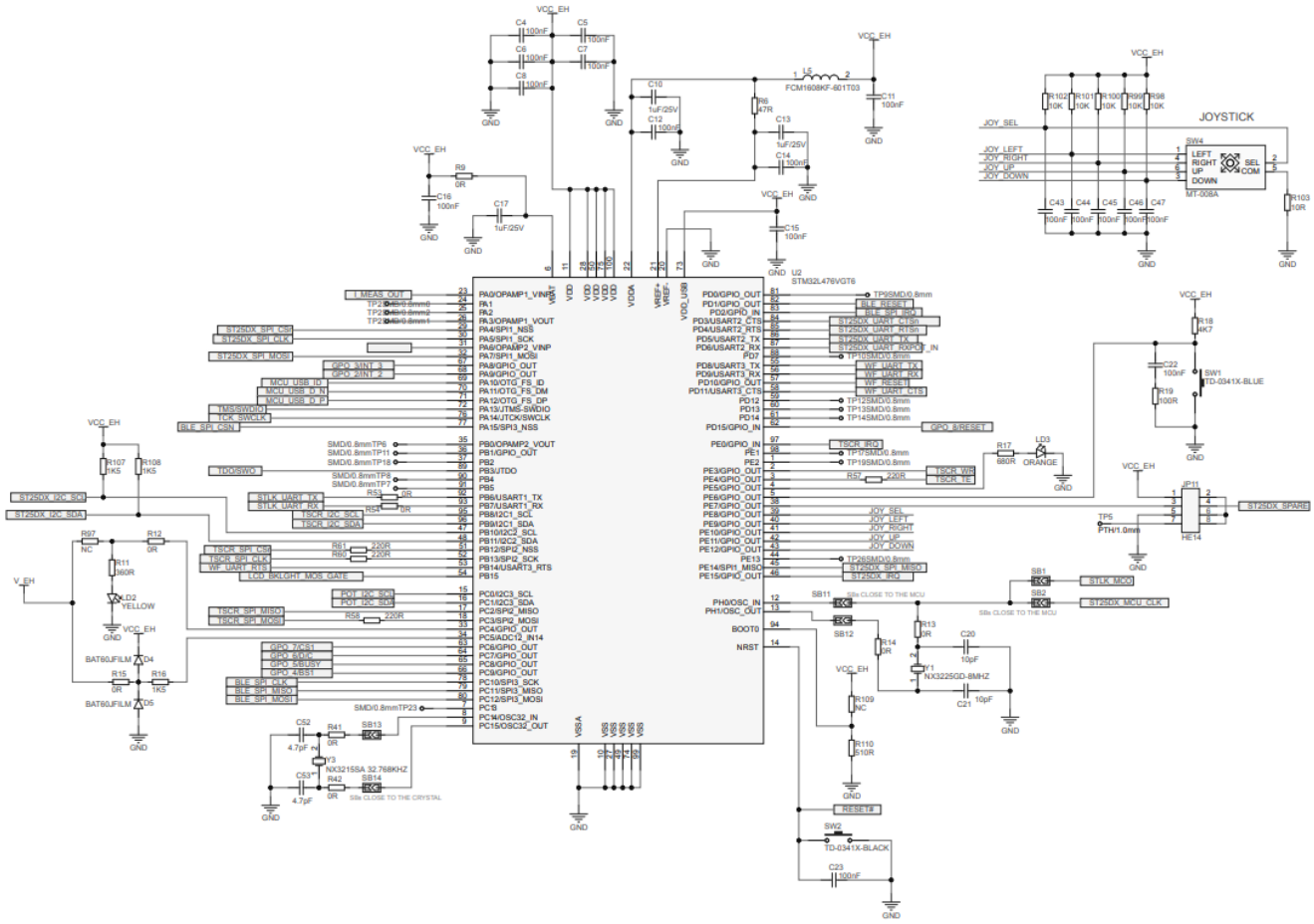


Figure 13. **STEVAL-ST25R3916B main board circuit schematic (4 of 10)**

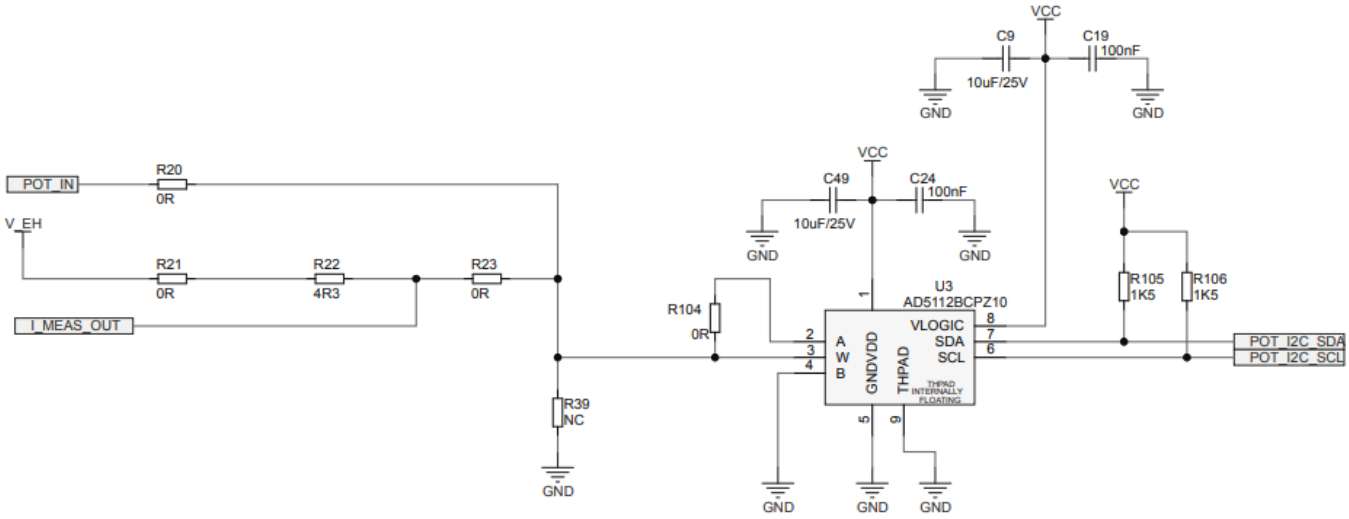


Figure 14. **STEVAL-ST25R3916B main board circuit schematic (5 of 10)**

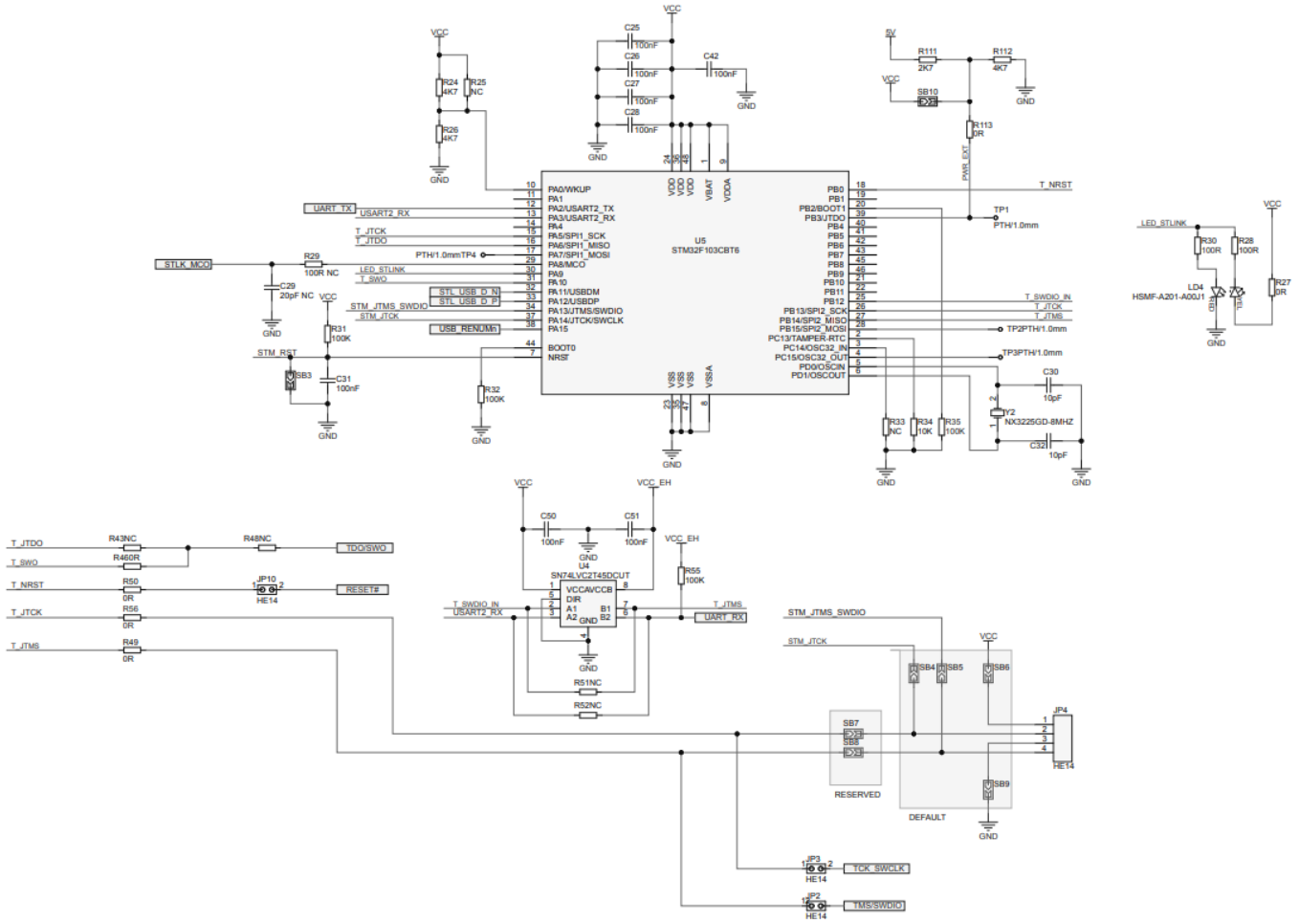


Figure 15. **STEVAL-ST25R3916B main board circuit schematic (6 of 10)**

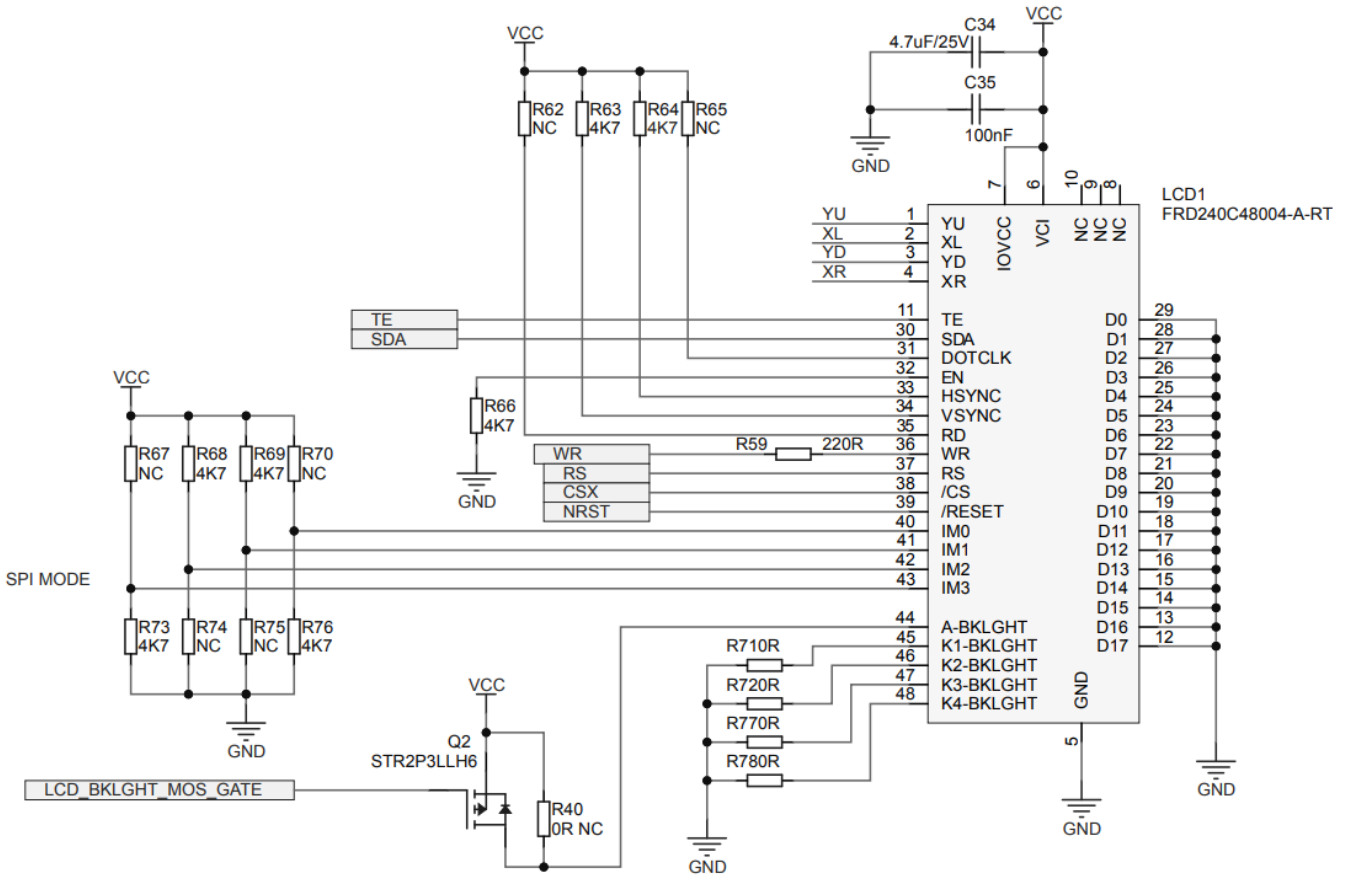


Figure 16. STEVAL-ST25R3916B main board circuit schematic (7 of 10)

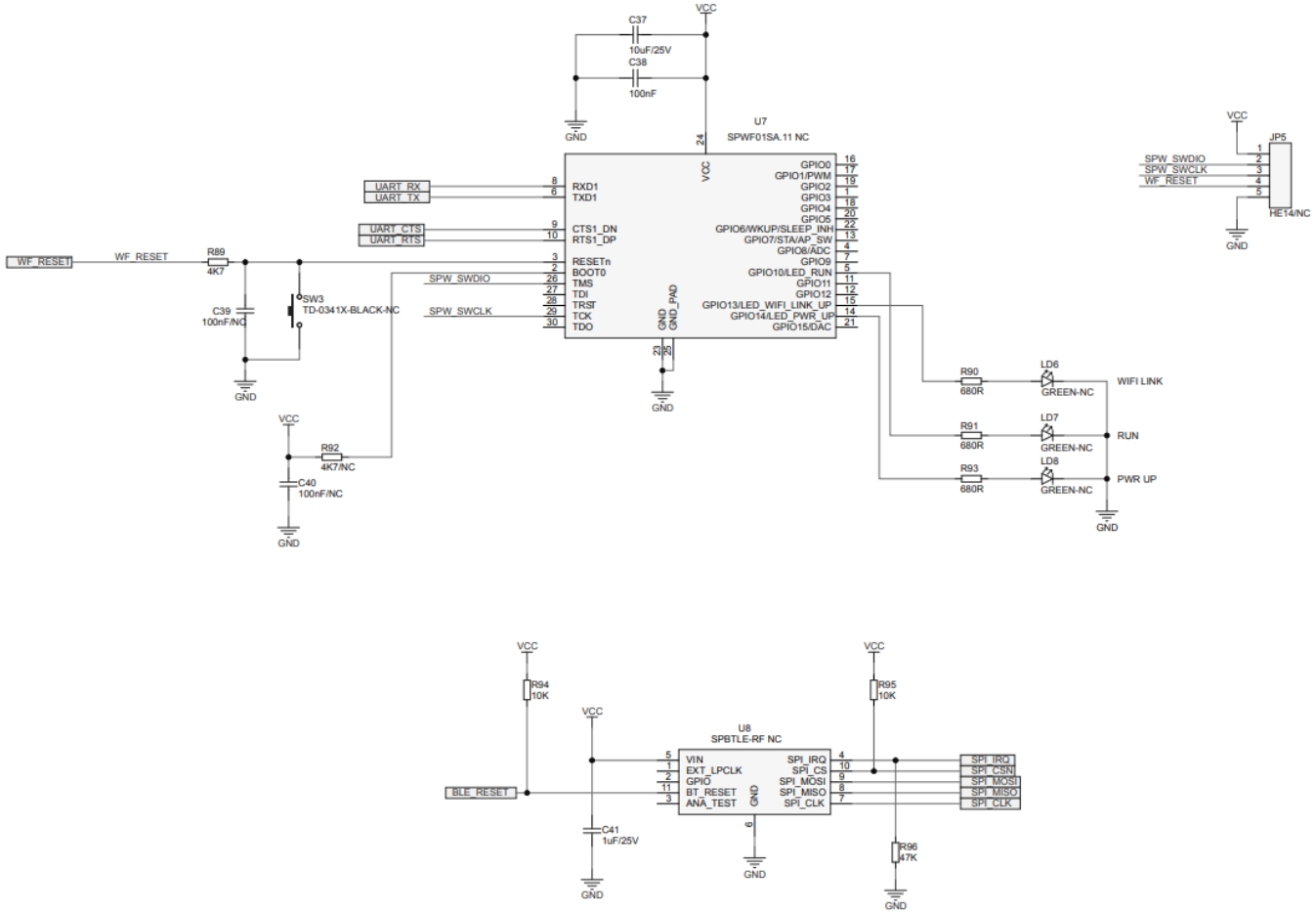


Figure 17. STEVAL-ST25R3916B main board circuit schematic (8 of 10)

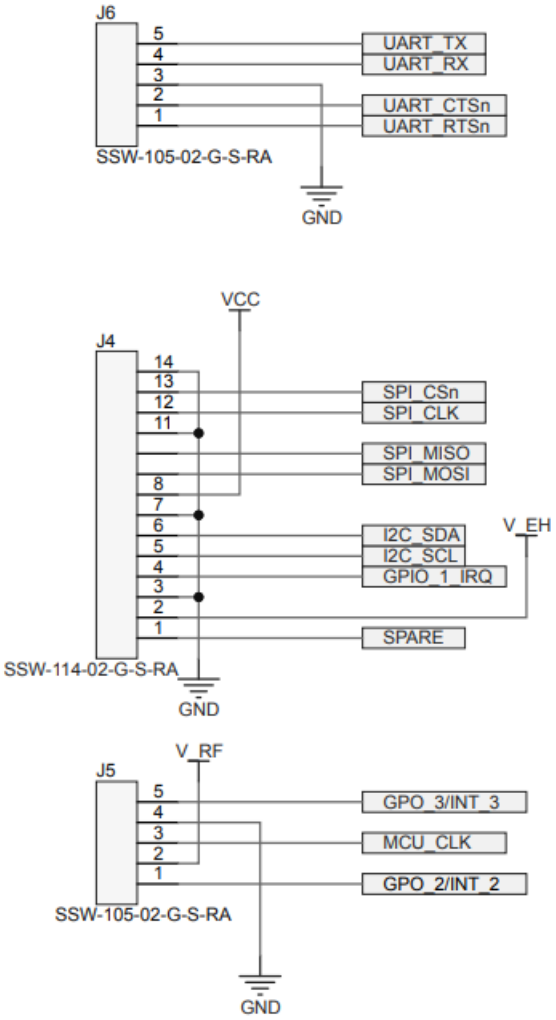


Figure 18. STEVAL-ST25R3916B main board circuit schematic (9 of 10)

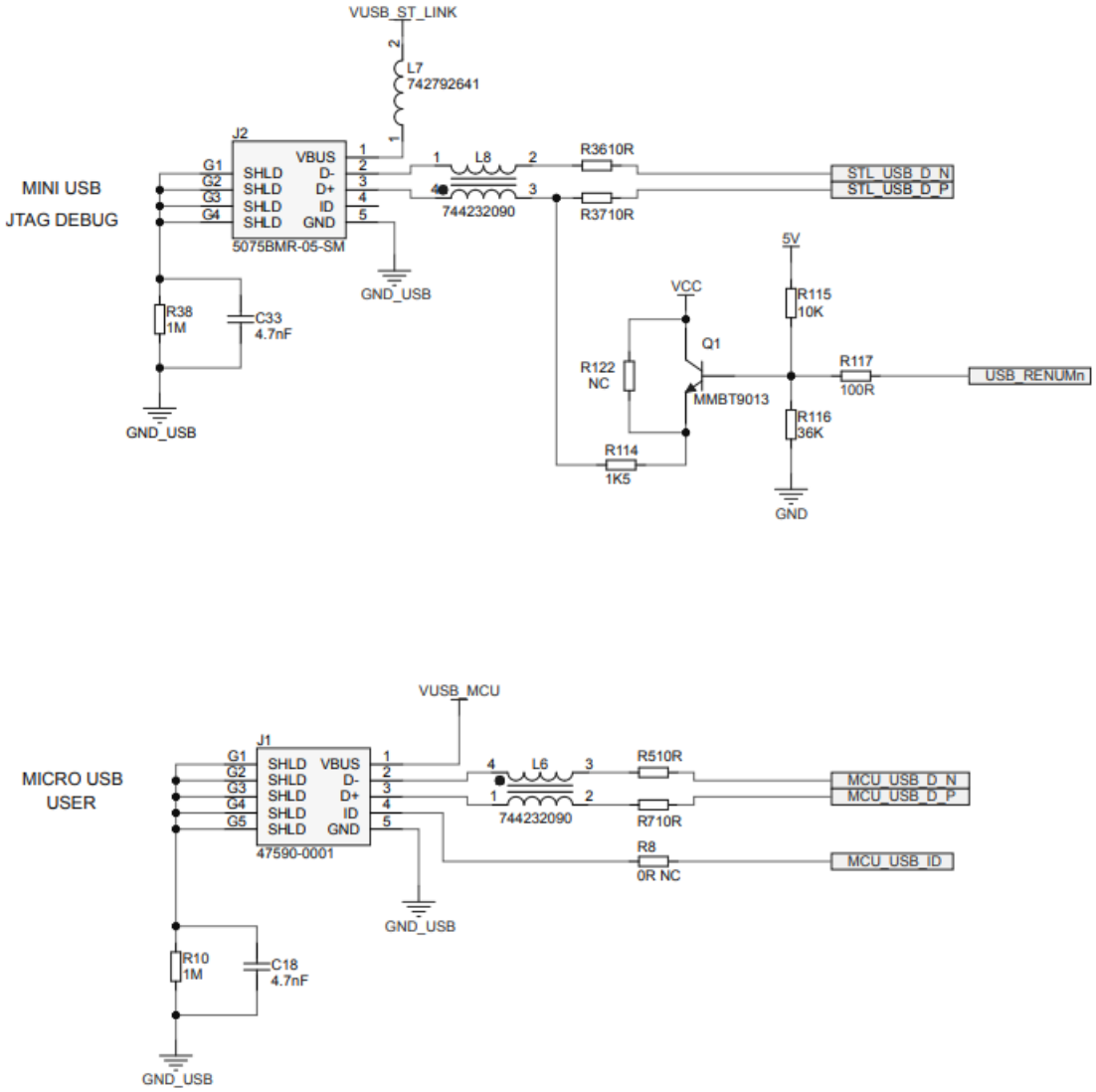


Figure 19. **STEVAL-ST25R3916B main board circuit schematic (10 of 10)**

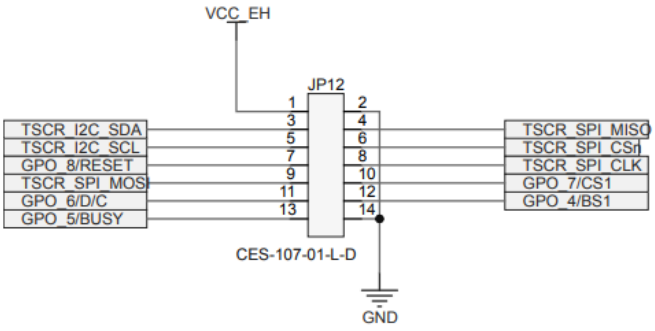


Figure 20. **STEVAL-ST25R3916B reader expansion board circuit schematic (1 of 3)**

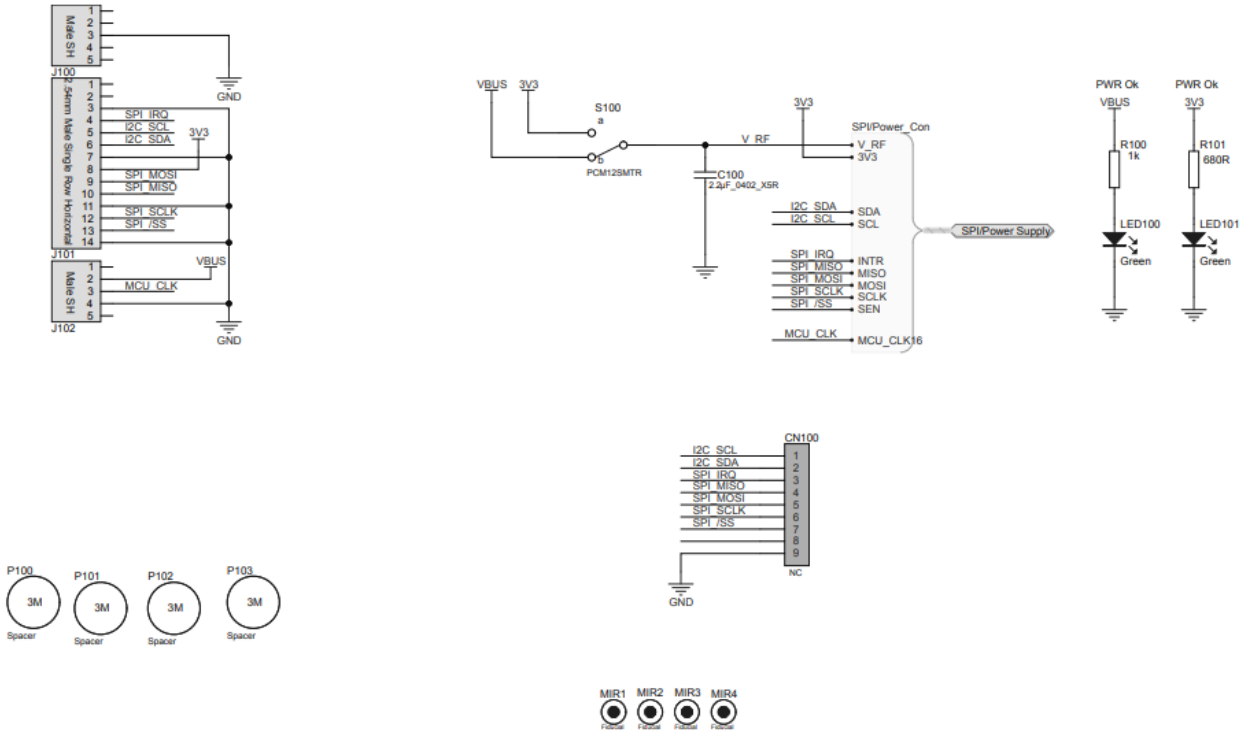


Figure 21. STEVAL-ST25R3916B reader expansion board circuit schematic (2 of 3)

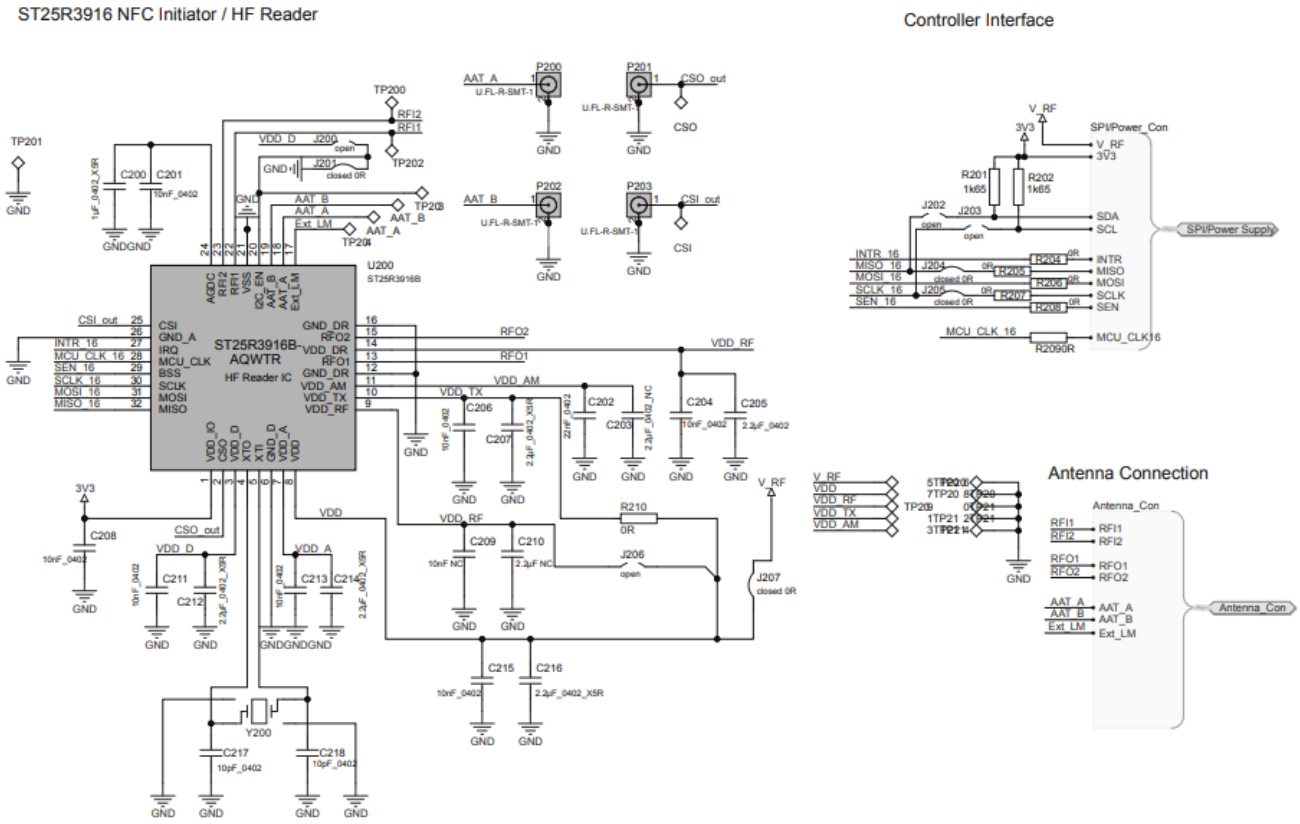
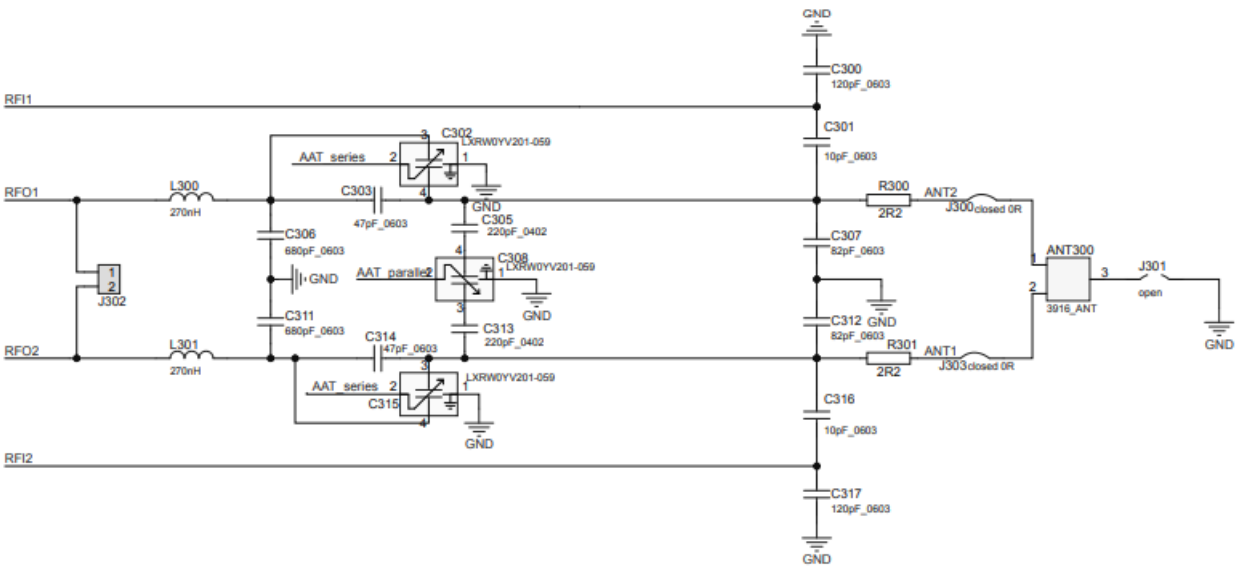
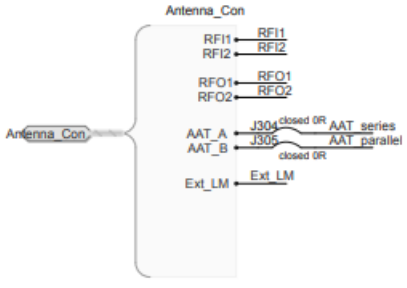


Figure 22. STEVAL-ST25R3916B reader expansion board circuit schematic (3 of 3)

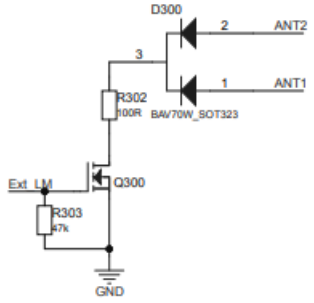
Antenna Circuit incl. EMI Filter and Matching



Antenna Connection



External Load Modulation Circuit



Bill of materials

Table 3. STEVAL-VOICE-UI bill of materials

Item	Q.ty	Ref.	Part/Value	Description	ManµFacturer	Order code
1	1	Table 4. STEV AL$M25R16B A	–	Main board	ST	Not available for separate sale
2	1	Table 5. STEV AL$D25R16B A	–	Reader expansion board	ST	Not available for separate sale

Table 4. Main board bill of materials

Item	Quantity	Ref.	Part/value	Description	Manufacturer	Order code
1	6	C1, C10, C13, C17, C41, C56	1uF 25V ±10% X5R 0603	CAPACITOR	Any	Any
2	1	C2	2.2uF 16V ±10% X7R 1206	CAPACITOR	Any	Any
3	1	C3	10nF 16V ±10% X7R 0402	CAPACITOR	Any	Any
4	30	C4, C5, C6, C7, C8, C11, C12, C14, C15, C16, C19, C22, C23, C24, C25, C26, C27, C28, C31, C35, C36, C38, C42, C43, C44, C45, C46, C47, C50, C51	100nF 16V ± 10% X7R 0402	CAPACITOR	Any	Any
5	6	C9, C37, C48, C49, C54, C55	10uF 25V ±10% X7R 0603	CAPACITOR	Any	Any
6	2	C18, C33	4.7nF 50V ±5% NPO 0402	CAPACITOR	Any	Any
7	4	C20, C21, C30, C32	10pF 50V ±5% NPO 0402	CAPACITOR	Any	Any

8	1	C29	20pF 0402 NOT FITTED	CAPACITOR	Any	Any
9	1	C34	4.7uF 25V ±10% X7R 0603	CAPACITOR	Any	Any
10	2	C39, C40	100nF 0402 NOT FITTED	CAPACITOR	Any	Any
11	2	C52, C53	4.7pF ±0.25pF 50V NPO 0402	CAPACITOR	Any	Any
12	5	D1, D2, D3, D4, D5	BAT60JFILM, SOD323	10 V general purpose signal Schottky diode	ST	BAT60JFILM
13	1	J1		MICRO USB	MOLEX	AB 47590-0001
14	1	J2		MINI USB B	NELTRON	5075BMR-05-SM
15	1	J4		CONNECTOR	SAMTEC	SSW-114-02-G-S-RA
16	2	J5, J6		CONNECTOR	SAMTEC	SSW-105-02-G-S-RA
17	6	JP1, JP2, JP3, JP10, JP13, JP15		CONNECTOR 1x2Pts	SAMTEC	TSW-102-07-G-S

Item	**Quantity**	**Ref.**	**Part/value**	**Description**	**Manufacturer**	**Order code**
18	1	JP4		CONNECTOR 1x4Pts	SAMTEC	TSW-104-07-G-S
19	1	JP5		CONNECTOR NOT FITTED	SAMTEC	TSW-105-07-G-S
20	4	JP6, JP7, JP8, JP9		CONNECTOR 1Pt	SAMTEC	TSW-101-07-G-S
21	1	JP11		CONNECTOR 2x4Pts	SAMTEC	TSW-104-07-G-D
22	1	JP12		CONNECTOR	SAMTEC	CES-107-01-L-D
23	1	JP14		CONNECTOR 1x3Pts & 1x1PT	SAMTEC	TSW-1xx-07-G-S
24	1	JP16		CONNECTOR 1x3Pts	SAMTEC	TSW-103-07-G-S

25	2	L1, L3		EMI FERRITE BEAD 600 Ohms	WURTH	742792042
26	3	L2, L6, L8		COMMON MODE FILTER	WURTH	744232090
27	2	L4, L7		EMI FERRITE BEAD 300 Ohms	WURTH	742792641
28	1	L5		FERRITE CHIP BEAD	TAI TECH	FCM1608KF-601T03
29	1	L9		SELF	MURATA	BLM18EG471SN1D
30	1	LCD1		LCD MODULE	SHENZHEN FRIDA	FRD240C48004-A-RT
31	1	LD1		Green LED	EVERLIGHT	19-21SYGC/S530-E1/TR8
32	1	LD2		Yellow LED	VISHAY	TLMY1000-GS08
33	1	LD3		Orange LED	EVERLIGHT	19-217/S2C-AM2N2VY/3T
34	1	LD4		Bicolor LED	AVAGO	HSMF-A201-A00J1
35	3	LD6, LD7, LD8		Green LED NOT FITTED	EVERLIGHT	19-21SYGC/S530-E1/TR8
36	5	PEG1, PEG2, PEG3, PEG4, PEG5		SELF ADHESIVE RUBBER BUMPER	3M	SJ5306
37	1	Q1	SOT23	Transistor	UNISONIC TECH.	MMBT9013L-G-AE3
38	1	Q2	STR2P3LLH6, SOT-23	P-Channel 30 V, 0.048 Ohm typ., 2 A STripFET H6 power MOSFET in a SOT-23 package	ST	STR2P3LLH6

Item	Quantity	Ref.	Part/value	Description	Manufacturer	Order code

39	27	R1, R3, R9, R12, R13, R14, R15, R20, R21, R23, R27, R41, R42, R46, R47, R49, R50, R53, R54, R56, R71, R72, R77, R78, R86, R104, R113	0R 0402	RESISTOR	Any	Any
40	2	R2, R110	510R ±1% 0402	RESISTOR	Any	Any
41	18	R4, R25, R33, R39, R43, R48, R51, R52, R62, R65, R67, R70, R74, R75, R83, R97, R109, R122	0402	RESISTOR NOT FITTED	Any	Any
42	5	R5, R7, R36, R37, R103	10R ±1% 0402	RESISTOR	Any	Any
43	1	R6	47R ±1% 0402	RESISTOR	Any	Any
44	6	R8, R40, R118, R119, R120, R121	0R 0402	RESISTOR NOT FITTED	Any	Any
45	2	R10, R38	1M ±1% 0402	RESISTOR	Any	Any
46	1	R11	360R ±1% 0402	RESISTOR	Any	Any
47	6	R16, R105, R106, R107, R108, R114	1K5 ±1% 0402	RESISTOR	Any	Any
49	16	R18, R24, R26, R63, R64, R66, R68, R69, R73, R76, R79, R80, R81, R82, R89, R112		RESISTOR 4K7 1% 0402	Any	Any
48	4	R17, R90, R91, R93	680R ±1% 0402	RESISTOR	Any	Any
50	4	R19, R28, R30, R117	100R ±1% 0402	RESISTOR	Any	Any
51	1	R22	4.3 Ohms ±1% 0402	RESISTOR	Any	Any

52	1	R29	100R 0402	RESISTOR NOT FITTED	Any	Any
53	8	R31, R32, R35, R55, R84, R85, R87, R88	100K ±1% 0402	RESISTOR	Any	Any
55	2	R44, R96		RESISTOR 47K 1% 0402	Any	Any
54	9	R34, R94, R95, R98, R99, R100, R101, R102, R115	10K ±1% 0402	RESISTOR	Any	Any
56	1	R45	15K ±1% 0402	RESISTOR	Any	Any
57	5	R57, R58, R59, R60, R61	220R ±1% 0402	RESISTOR	Any	Any

Item	Quantity	Ref.	Part/value	Description	Manufacturer	Order code
58	1	R92	4K7 ±1% 0402	RESISTORNOT FITTED	Any	Any
59	1	R111	2K7 ±1% 0402	RESISTOR	Any	Any
60	1	R116	36K ±1% 0402	RESISTOR	Any	Any
61	14	SB1, SB2, SB3, SB4, SB5, SB6, SB7, SB8, SB9, SB10, SB11, SB12, SB13, SB14	0603	SOLDER BRIDGE OPEN SIZE	Any	Any
62	1	SW1		BLUE PUSH BUTTON	WEALTHMETAL	TD-0341X
63	1	SW2		BLACK PUSH BUTTON	WEALTHMETAL	TD-0341X
64	1	SW3		BLACK PUSH BUTTON NOT FITTED	WEALTHMETAL	TD-0341X
65	1	SW4		JOYSTICK	WEALTHMETAL	MT-008A
66	5	TP1, TP2, TP3, TP4, TP5	HOLE DIAM. 1.0mm	PLATED TEST POINT	Any	Any

67	17	TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP26	COPPER LAND DIAM. 0.8 mm	TEST POINT	Any	Any
68	1	U1	LD39050PUR, DFN6 3×3	500 mA low quiescent current and low noise voltage regulator	ST	LD39050PUR
69	1	U2	STM32L476VG T6, LQFP 100 14x14x1.4 mm	IC	ST	STM32L476VGT6
70	1	U3		DIGITAL POT	ANALOG DEV.	AD5112BCPZ10
71	1	U4	VSSOP8	LEVEL SHIFTER	TEXAS	SN74LVC2T45DCUT
72	1	U5	STM32F103CB T6, LQFP 48 7x7x1.4 mm	Mainstream performance line, Arm Cortex-M3 MCU with 128 Kbytes of Flash memory, 72 MHz CPU, motor control, USB, and CAN	ST	STM32F103CBT6
73	1	U7		Wi-Fi module NOT FITTED	ST	SPWF01SA.11
74	1	U8		Bluetooth ® Low Energy module NOT FITTED	ST	SPBTLE-RF

Item	Quantity	Ref.	Part/value	Description	Manufacturer	Order code
75	2	Y1, Y2		SMD CRYSTAL	NDK	NX3225GD-8MHZ-EXS00A- CG04874
76	1	Y3		SMD CRYSTAL	NDK	NX3215SA 32.768KHZ

Table 5. Reader expansion board bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	6	C100, C205, C207, C212, C214, C216	2.2µF_0402_X5 R	Capacitors	MURATA	GRM155R60J225ME15D
2	1	C200	1µF_0402_X5 R	Capacitor	MURATA	GRM155R61C105KA12D
3	7	C201, C204, C206, C208, C211, C213, C215	10nF_0402	Capacitors	AVX	04023C103KAT2A
4	1	C202	22nF_0402	Capacitor	AVX	0402YC223KAT2A
5	1	C203	2.2µF_0402_N C	Capacitor not assembled	MURATA	GRM155R60J225ME15D NOT FITTED
6	1	C209	10nF	Capacitor not assembled	AVX	04023C103KAT2A NOT FITTED
7	1	C210	2.2µF	Capacitor not assembled	MURATA	GRM155R60J225ME15D NOT FITTED
8	2	C217, C218	10pF_0402	Capacitors	MURATA	GRM1555C1H100GA01D
9	2	C300, C317	120pF_0603	Capacitors	MURATA	GRM1885C1H121GA01D
10	2	C301, C316	10pF_0603	Capacitors	MULTICOMP	MC0603N100F500CT
11	3	C302, C308, C315		Capacitors	MURATA	LXRW0YV201-059
12	2	C303, C314	47pF_0603	Capacitors	MURATA	GRM1885C1H470FA01D
13	2	C305, C313	220pF_0402	Capacitors	MURATA	GRM1555C1H221FA01D
14	2	C306, C311	680p_COG	Capacitors	MURATA	GRM1885C1H681GA01D
15	2	C307, C312	82pF_0603	Capacitors	MURATA	GRM1885C1H820FA01D
16	1	D300		Diode	DIODES INC	BAV70W
17	2	J100, J102	5 pin	Male single row horizontal	Samtec	TSW-105-08-G-S-NA
18	1	J101	14 pin	Male single row horizontal	Samtec	TSW-114-08-G-S-NA
19	15	J201, J204, J205, J207, J300, J303, J304, J305, R204, R205, R206, R207, R208, R209, R210	0R_0402	Resistors	Multicomp	MC00625W040210R

20	1	J302	HE14 2PTS	Male single r ow horizontal not fitted	Any	Any
21	2	L300, L301		Fixed inducto r	TDK	MLJ1608WR27JT000
22	2	LED100, LED 101		LEDs	Lite-On	LTST-C190KGKT
23	4	P100, P101, P102, P103		Connectors	Samtec	SJ5303TRANS
24	4	P200, P201, P202, P203		Connectors	HIROSE(HR S)	U.FL-R-SMT-1(10)
25	1	Q300		30 V, 400 mA N-channel tre nch MOSFET	NEXPERIA	NX3008NBK
26	1	R100	1k, 0402	Resistor	Panasonic	ERJ2GEJ102X
27	1	R101	680R, 0402	Resistor	Yageo	RC0402JR-07680RL
28	2	R201, R202	1k65, 0402	Resistors	MULTICOMP	MC00625W040211K65
29	2	R300, R301	2R2, 0603	Resistors	Vishay Dale	CRCW06032R20FKEA
30	1	R302	100R_0402	Resistor	MULTI SOUR CES	RESISTOR 0402 100R
31	1	R303	47K_0402	Resistor	MULTI SOUR CES	RESISTOR 0402 47K
32	1	S100		Switch	C & K COMP ONENTS	PCM12SMTR
33	1	U200	ST25R3916B-AQWT, VFQF PN 5X5X1 32 L WETTABLE FLANKS	NFC reader f or payment, c onsumer, and industrial	ST	ST25R3916B-AQWT
34	1	Y200		Crystal	NDK	NX2016SA STD-CZS-5 27.12MHz

Kit versions

Table 6. STEVAL-ST25R3916B versions

PCB version	Schematic diagrams	Bill of materials
The evaluation kit with order code STEVAL-ST25R3916B contains the STEVAL$M25R16BA main board plus the STEVAL$D25R16BA reader expansion board (1)	STEVAL-ST25R3916B schematic diagrams	STEVAL-ST25R3916B bill of materials

1. These codes identify the first version of the boards contained in the kit. They are printed on the boards PCB.

Regulatory compliance information

Notice for US Federal Communication Commission (FCC)
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Standard applied: FCC 47 CFR Part 15.225: April 2020

Notice for Innovation, Science and Economic Development Canada (ISED)
This device complies with Innovation, Science and Economic Development RSS standards. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Notice for the European Union
The STEVAL-25R3916B is in conformity with the essential requirements of the Directive 2014/53/EU (RED) and of the Directive 2015/863/EU (RoHS). Applied harmonized standards are listed in the EU Declaration of Conformity.
Notice for the United Kingdom
The STEVAL-25R3916B is in compliance with the UK Radio Equipment Regulations 2017 (UK SI 2017 No. 1206 and amendments) and with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (UK SI 2012 No. 3032 and amendments). Applied standards are listed in the UK Declaration of Conformity.

Revision history

Table 7. Document revision history

Date	Revision	Changes
20-Feb-2023	1	Initial release.

Documents / Resources

	ST STEVAL-ST25R3916B High Performance NFC Universal Device and Emvco Reader [pdf] Owner's Manual STEVAL-ST25R3916B High Performance NFC Universal Device and Emvco Reader, STEVAL-ST25R3916B, High Performance NFC Universal Device and Emvco Reader, Universal Device and Emvco Reader, Emvco Reader

References

- STMicroelectronics: Our technology starts with you
- STMicroelectronics Trademark List - STMicroelectronics
- BAT60 - 10 V General pupose Signal Schottky Diode - STMicroelectronics
- LD39050 - 500 mA low quiescent current and low noise voltage regulator - STMicroelectronics
- ST-LINK/V2 - ST-LINK/V2 in-circuit debugger/programmer for STM8 and STM32 - STMicroelectronics
- ST25R3916B - NFC reader for payment, consumer and industrial - STMicroelectronics
- STEVAL-25R3916B - Discovery kit for the ST25R3916B high performance NFC universal device and EMVCo reader - STMicroelectronics
- STM32F103CB - Mainstream Performance line, Arm Cortex-M3 MCU with 128 Kbytes of Flash memory, 72 MHz CPU, motor control, USB and CAN - STMicroelectronics
- STM32L476VG - Ultra-low-power with FPU Arm Cortex-M4 MCU 80 MHz with 1 Mbyte of Flash memory, LCD, USB OTG, DFSDM - STMicroelectronics
- STR2P3LLH6 - P-Channel 30 V, 0.048 Ohm typ., 2 A STripFET H6 Power MOSFET in a SOT-23 package - STMicroelectronics
- STSW-ST25R010 - PC software installer for ST25R3916-DISCO and STEVAL-25R3916B boards - STMicroelectronics